

1. A circuit for generating a cyclic prefix of a symbol comprised of a sequence of samples in the time domain, said prefix being a reproduction of the last samples of the symbol at the beginning of the symbol, the symbol being obtained by inverse Fourier transform of complex coefficients corresponding to  
10 respective frequencies, the circuit comprising:

means for shifting the phase of each complex coefficient by a value proportional to its frequency, so that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation;

a memory for storing the shifted samples; and

15 means for copying at the end of the symbol the stored samples.

2. The cyclic prefix generation circuit of claim 1, wherein the means for shifting the phase of the complex coefficients include a multiplier connected to multiply each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.

20 3. The cyclic prefix generation circuit of claim 1, wherein the memory is of FIFO type.

4. The cyclic prefix generation circuit of claim 1, wherein the means for copying the stored samples include a multiplexer, a first input and a second input of which are respectively connected to the input and to the output of  
25 the memory.

5. The cyclic prefix generation circuit of claim 1, wherein the means for shifting delays the symbol only by the duration of said prefix and the memory stores only the shifted samples without storing any of the samples of the symbol other than the shifted samples.

- 5                    6.     A method for generating a cyclic prefix of a symbol in the time domain, said prefix being a reproduction of the last samples of the symbol at the beginning of the symbol, the symbol being obtained by inverse Fourier transform of complex coefficients corresponding to respective frequencies, the method comprising the steps of:
- 10                            shifting the phase of each complex coefficient by a value proportional to the frequency with which it is associated, so that said last samples of the symbol are shifted at the beginning of the symbol according to a circular permutation;
- storing the shifted samples of the beginning of the symbol; and
- 15                            copying the stored samples at the end of the symbol.
7.     The method of claim 6, wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.
- 20                    8.     The method of claim 6, wherein the storing step stores the samples in a FIFO memory.
9.     The method of claim 6, wherein the storing step stores only the last samples of the symbol without storing any of the samples of the symbol other than the last samples.
- 25                    10.    The method of claim 6 wherein the shifting step includes delaying the symbol only by the duration of said prefix and the storing step stores only the shifted samples without storing any of the samples of the symbol other than the shifted samples.

- 5                    11. A method for transmitting a symbol represented in a frequency domain by complex coefficients corresponding to respective frequencies, the method comprising:
- shifting a phase of each complex coefficient by a value proportional to the frequency with which the complex coefficient corresponds;
- 10                    transforming the symbol to a time domain by performing an inverse Fourier transform of the phase-shifted complex coefficients to produce a set of samples as the symbol in the time domain; and
- outputting the symbol in the time domain with a subset of the samples as a prefix of the symbol.
- 15                    12. The method of claim 11, wherein shifting the phase of the complex coefficients includes multiplying each complex coefficient by a complex value having a unity norm and a phase proportional to the frequency associated with each coefficient.
- 20                    13. The method of claim 11, further comprising storing the subset of the samples in a memory prior to outputting the symbol.
14. The method of claim 13 wherein the storing step stores the samples in a FIFO memory.
15. The method of claim 13, wherein the storing step stores only the subset of samples of the symbol without storing any of the samples of the symbol other than the subset.
- 25                    16. The method of claim 11 wherein the subset of the samples are samples produced from complex coefficients occurring at the end of the symbol in the frequency domain.

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17. The method of claim 11, further comprising:  
delaying the symbol only by the duration of said prefix; and  
storing, prior to outputting the symbol, only the shifted samples  
without storing any of the samples of the symbol other than the shifted samples.